

PATENT SPECIFICATION



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238,470

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COMPLETE SPECIFICATION.

Improvements in and relating to Perambulators and the like.

I, JAMES HENRY CARTER BOYD, of "St. Margarets," Bath Road, Salt Hill, Slough, in the County of Buckingham, Engineer, of British nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to perambulators and like vehicles and particularly to improvements in the under-carriage, such term including the main frame and road springs and the means employed for assembling same together.

The main object of the present invention is to provide an under-carriage so designed that the mechanical features comprising same are, on the one hand, reduced to a minimum number, without detracting from the suspension of the vehicle, and, on the other hand, so designed as to offer certain advantages as to construction which are not found in similar vehicles as at present manufactured.

A further object of this invention is to provide a design of under-carriage in which the suspension means are located substantially within the body and immediately beneath the seating accommodation thereof, and thus avoid the use of lengthy frames, leaf springs or coiled springs, straps and other mechanical features which have for effect not only to increase the overall length and weight of the vehicle but also the prime costs of the manufacturer and the labour which has to be expended by the user in keeping same in an efficient condition of appearance and cleanliness.

An under-carriage constructed in accordance with the present invention consists essentially of a rigid frame separate from but adapted to be secured in a rigid manner to the body portion of

the vehicle, and of a pair of wheel axles, to which are secured a pair of longitudinally extending road springs the outer ends of which are each scrolled in a vertical plane to a double and relatively reversed "C" form, the extreme ends of same being attached to the corresponding ends of the frame as above by means of shackle members adapted to permit movement of the ends of the springs consequent upon variation in the conditions of load or of travel of the vehicle, the scrolled ends of the springs being located as specified above.

If desired, use may be made of shackles of deformable material, whilst the invention includes also other details of construction of the means employed for securing the axles to the road springs and of adjusting the height of the handle as hereinafter more fully described.

A constructional form of the present invention will now be described with reference to the accompanying drawings, which illustrate the invention as applied to a baby carriage and wherein Fig. 1 is a side elevation of an under-carriage as may be fitted to a baby carriage body shown in dotted lines, although it is to be understood that same is applicable to similar types of vehicles, such as invalid chairs, wheeled stretchers, trolleys, floats, push cars, trade barrows and similar vehicles. Figure 2 is an end view of Figure 1, shewing certain details which cannot be clearly shewn in Figure 1. Figure 3 is a side elevation and Figure 4 is an end view of Figure 3 of a deformable shackle member including an annular rubber buffer piece. Figures 5 and 6 are similar views to Figures 3 and 4 of an axle and road spring stirrup piece, whilst Figure 7 is a side elevation of a sliding joint for readily adjusting the height of the handle to the particular requirements of the user. Figure 8 is a

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side view of a wheel brake attachment. Figures 3 to 7 inclusive are drawn to a larger scale than that of Figures 1 and 2, whilst Figure 8 is drawn to a larger scale than that of Figures 3 to 7.

Referring more particularly to Figure 1, the frame consists of two tubular longitudinal members 6 and 7 respectively up-turned at one end as at 8 and 9 for the attachment of the handle as hereinafter described and two transverse tubular members 10 and 11 secured to the above longitudinal members in any convenient manner as by bracing or welding. The handle portion consists of two upwardly directed and re-curved tubular members 12 and 13, united together at their upper ends by a bolt or the like (not shown) passing axially through a handle portion 14.

The road springs 15 and 16 each consist in the present case of a single steel strip comprising a straight portion 17 bent up at each end to inclined form as at 18—19 and secured to the wheel axles in any convenient manner but preferably as hereinafter described with reference to Figures 5 and 6 of the accompanying drawings.

Each end of the road springs is scrolled outwardly to the form of a "C," as indicated at 19—19 and from the head portion off such "C" is scrolled again to a second form of "C," as at 20—20, such latter "C" being reversed as regards position relatively to the former "C" but both lying in a vertical plane common to both. The free end of the inverted "C" 20—20, is provided with means for attaching it to a rubber buffer, as shown in Figures 3 and 4, in which 21 is the free end of such inverted "C," which is drilled for the passage of a bolt 22 adapted to pass through a radially directed aperture in the annular rubber buffer 23, preferably provided with a canvas reinforcing fabric 24, embedded in the rubber material in a manner similar to the construction employed in building up a motorcar tyre, such reinforcement increasing the strength of the buffer and preventing it from becoming unduly stretched, without modifying to an appreciable extent the cushioning effect of such buffer. The bolt 22 is adapted to screw into a plate 25, curved to conform substantially with the radius of the inner surface of the annulus and is provided at each end with a lip 26, adapted to retain the buffer in position at the end of the spring. 27 is a small metal plate secured in any convenient manner to the underside of the metal frame above described, which together with the said plate, is drilled for the

passage of a bolt 28, provided with a plate 29 (similar to the plate 25) for securing the buffer to the frame in the same manner as that already described with reference to the attachment of the buffer to the free end of the road spring. The effect of varying loads or road inequalities on the road spring is to cause the upper end of the spring to move about an arc described from a fixed point located approximately at the point of attachment of said spring to the wheel axles, it being borne in mind that the whole length of spring between two such points acts as a cantilever spring and absorbs all jolts imparted to the road wheels and prevents them from being transmitted to the body portion of the vehicle. The deformable nature of the particular material used for the buffer enables the latter to assume such forms as will not restrain the movement of the corresponding end of the road spring whilst the fabric embedded in such material prevents undue stretching of same, which would cause the rupture of the buffer, which in operation rolls to a slight extent between the upper surface of the spring and the under surface of the plate 27. A further advantage gained from the use of such buffer is that the collapsible property of the material enables a very pronounced cushioning effect to take place, thus correspondingly increasing the efficiency of the suspension without the disadvantages resulting from the unpleasant periodical vibrations set up when use is made for supporting the body of the vehicle of coiled or helical springs, the effect of which is to impart a very "bumpy" action to the suspension over which the passenger and the person propelling the vehicle have no control.

Referring now to Figures 5 and 6, the straight portion 17 of the road spring is drilled for the passage of a bolt 29, which is passed also through a plate 30, provided on each side with two downwardly directed lugs 31—31 adapted to embrace the axle and with two up-turned ears 32—32 adapted to engage the road spring, a similar construction having been previously proposed for securing longitudinal side springs in a plane inclined to the vertical. If desired, a strengthening plate 33 may be provided on the upper side of the road spring for increasing the strength of the spring at such point.

The employment of the axle stirrup above described is of special advantage as it enables perfect and constant alignment of the springs and axles to be obtained and maintained thus obviating the unpleasant rolling of the vehicle to

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one side or to the other, which occurs when the parts after use or severe jolting get out of relative alignment. This defect can only be corrected by careful re-alignment of all such parts, which is often impossible owing to the wear which has developed due to the use of the vehicle in such a faulty condition.

In Figure 7, the handle member 12 is shown as sliding telescopically and friction-tight on the upturned end 8 of the longitudinal member 6 of the frame. The member 12 is slotted by saw cut as at 34 and both telescoping parts are held rigidly together by means of two collars 35-36 adapted, when the handle has been brought to a height best suited to the user's requirements, to be locked in position by screws 36-36.

In Figure 8 the numeral 37 indicates the rear axle on which is rotatably mounted the road wheel, a portion 38 of the hub and spokes 39 attached thereto being shown for the sake of clearness of the drawing. 40 is a metal tongue adapted to slide through a lug 41, slotted as at 42 for the passage of said tongue and integral with a clip 43, which is passed around the axle and secured in position by a screw 44. The tongue is slotted as at 45 and slides on the bolt 29^a hereinbefore described, which is provided with a lock nut 46 for holding said tongue in position. The tongue is provided with a downwardly directed extension or arm 47^a. In use, the user pushes the tongue longitudinally of the axle by sliding the arm 47^a to one side, preferably by means of the toe portion of his or her boot or shoe, thus causing the outer end of the tongue to engage between the wheel spokes 39 and thus prevents further rotation of the wheel, as shown in dotted lines on Figure 8. The release of the brake is obtained by sliding the tongue in the same manner but in the reverse direction until the free end of said tongue is withdrawn from between the wheel spokes. The tongue is held in operative or inoperative position by means of a spring 48 secured to said tongue in any convenient manner and adapted to engage in slots 49, 50 respectively cut on the underside of the axle 37, as shown and in locations corresponding with the "on" and "off" positions respectively of the brake.

In the drawing the outer end of the tongue is shown as cranked or offset as at 51, so as to clear the hub portion of the wheel and is rounded off in a horizontal plane at 52, so as to readily engage between the spokes when slid into operative position in a known manner.

It is to be observed that the employ-

ment of details of construction shown in Figures 3 to 8 inclusive is entirely optional and as such, afford certain advantages when used, either singly or in combination with each other, in the under-carriage construction illustrated in the first two figures.

In a modified form of construction, the upturned ends 8 and 9 of the longitudinal members of the frame may be of such length as to constitute the members 12 and 13, both of which may at their upper portion be bent towards one another and secured in any convenient manner so as to constitute the handle portion complete. As a further alternative, the handle members 12 and 13 and longitudinal members 6 and 7 and possibly the transverse member 10 may be bent from a single length of tubing.

The above described construction of undercarriage is particularly applicable to the construction of vehicle body described in Specification No. 238,469.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An under-carriage for a perambulator and the like consisting essentially of a rigid frame separate from but adapted to be secured in a rigid manner to the body of the vehicle, and a pair of wheel axles, to which are secured a pair of longitudinally extending road springs the ends of which are each scrolled to a double "C" form, whereof the first "C" is relatively reversed in position to the second "C" completing such scroll, and shackle members for attaching the free ends of each spring to the corresponding ends of the frame, such scrolls lying substantially within the body of the perambulator and under the seating accommodation thereof substantially as described.

2. An under-carriage for a perambulator and the like as claimed in Claim 1, wherein each of the longitudinal members of the frame are up-turned at one end to form or carry the handle portion of the vehicle substantially as described.

3. An under-carriage for a perambulator and the like as claimed in Claim 2, wherein the handle portion is adapted to telescope on the up-turned ends of the longitudinal members of the frame and adapted to be secured in position thereon substantially as herein described with reference to Figure 7 of the accompanying drawings.

4. An under-carriage for a perambulator and the like as claimed in Claim 1, wherein the shackle members comprise

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a reinforced rubber annular member substantially as herein described with reference to Figures 3 and 4 of the accompanying drawings.

- 5 5. An under-carriage for a perambulator and the like, as claimed in Claim 1, or in Claim 2, or in Claim 3, or in Claim 4, wherein relative alignment of the springs and axles is obtained by a stirrup plate, as herein described with reference to Figures 5 and 6 of the accompanying drawings.

- 10 6. An under-carriage for a perambulator or the like as set forth in any of the preceding claims and provided with a brake member consisting essentially of

a tongue mounted and adapted to slide on the wheel axle, and provided with an extension adapted to engage between the spokes of the adjacent road wheel and with a second extension for enabling same to be moved into operative position substantially as described with reference to Figure 8 of the accompanying drawings.

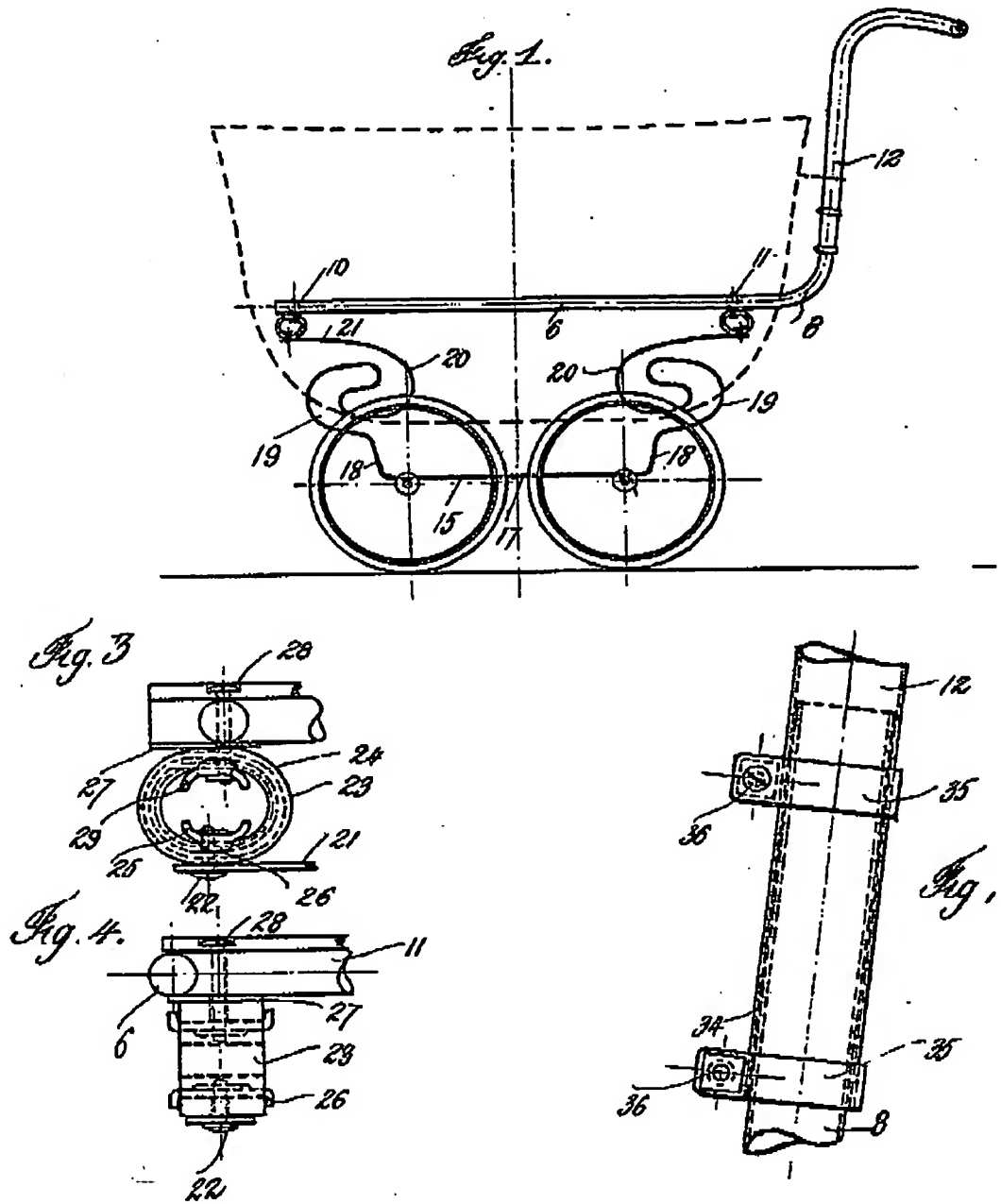
- 25 7. An under-carriage for a perambulator and the like, constructed, arranged and adapted for use substantially as herein described with reference to the accompanying drawings.

Dated this 14th day of February, 1923. 30
JAMES HENRY CARTNER BOYD.

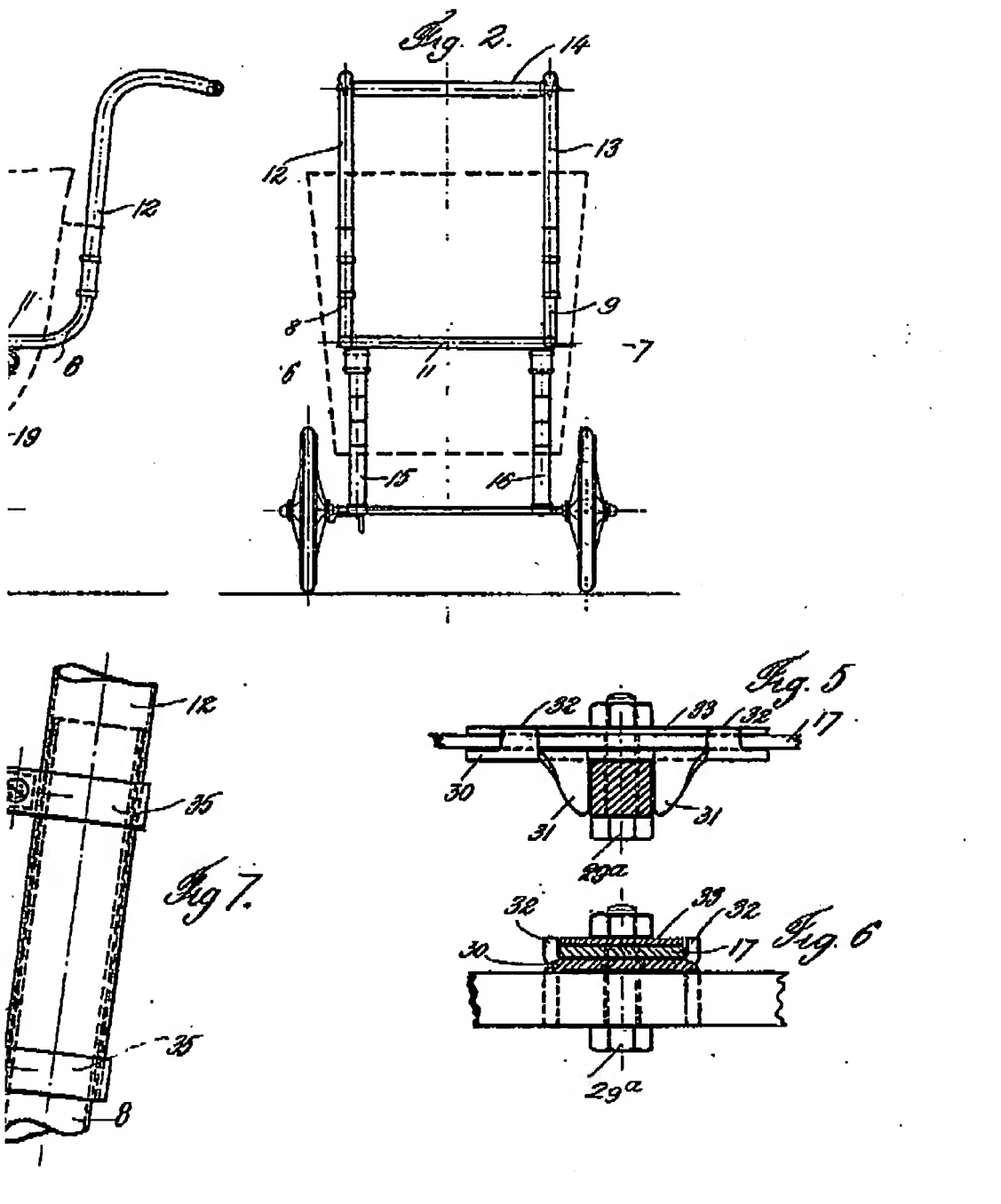
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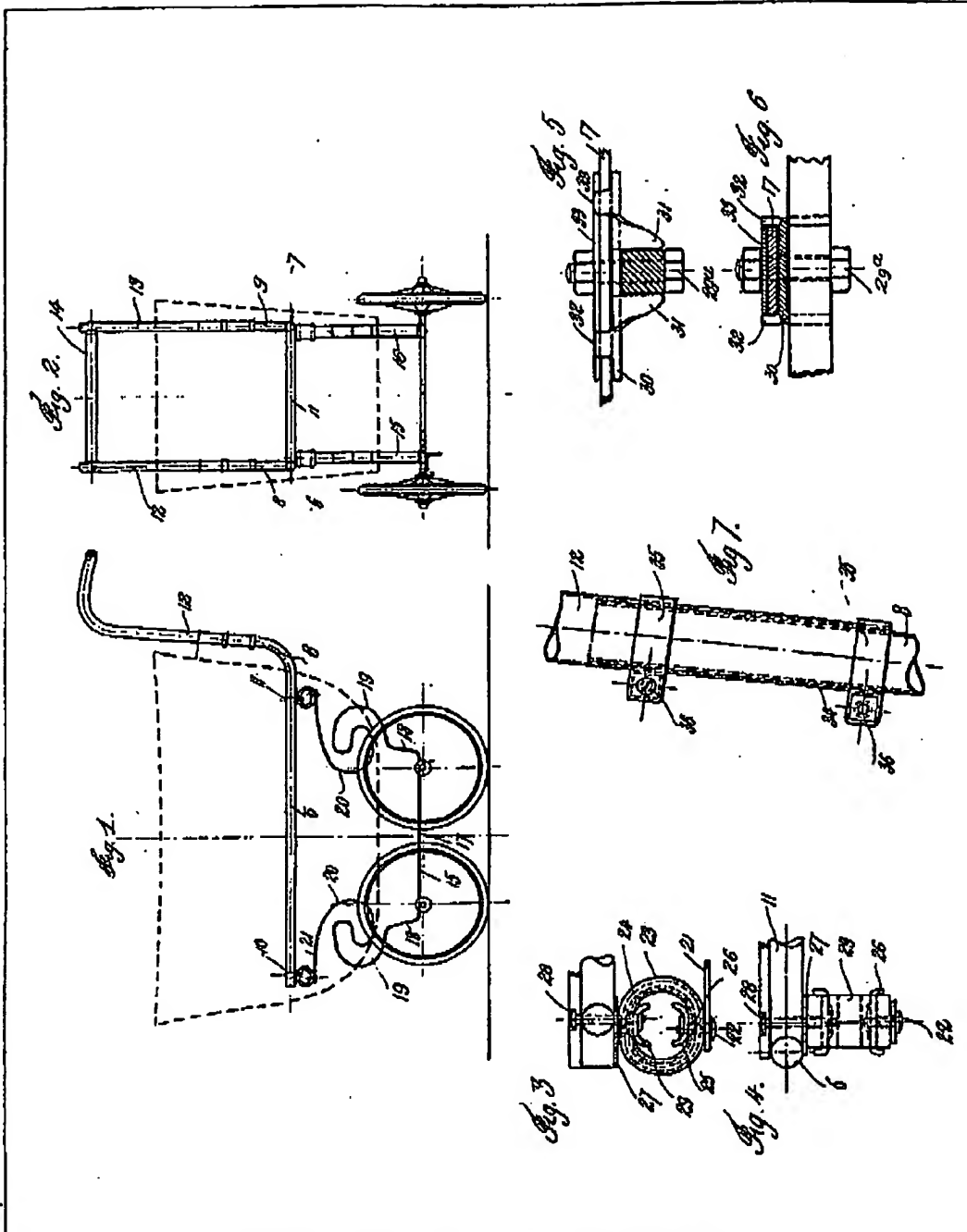
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SHEET 1



Wiley & Sons Photo-Litho

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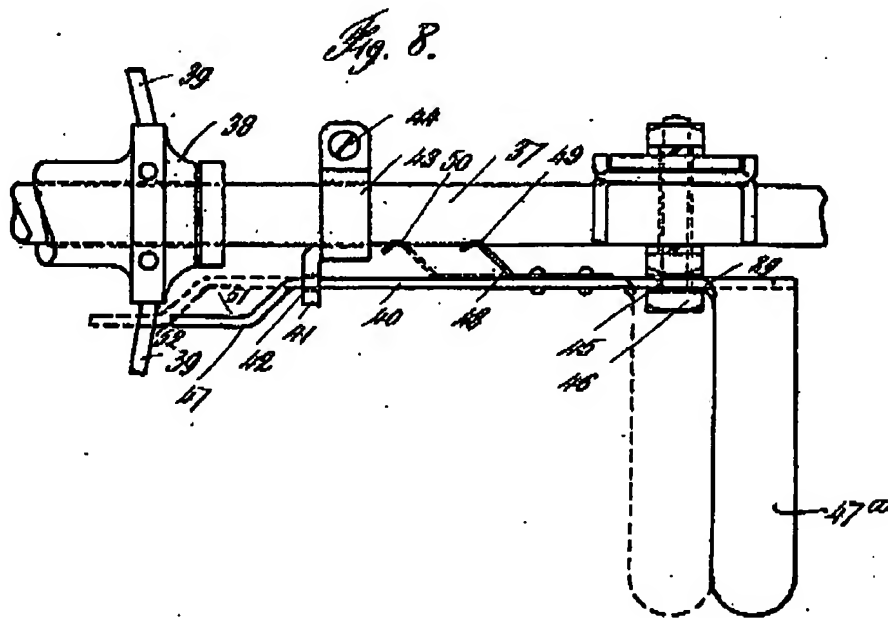
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SHEET 2

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